Power Mac G4 FAQ

Q. What are the benefits of the new Power Mac G4 systems?

A. The new Power Mac G4 systems are some of the fastest personal computers ever created. The heart of the Power Mac G4 is the PowerPC G4 with Velocity Engine. This processor incorporates vector processing technology pioneered in supercomputers. In fact, the PowerPC G4 is the first commercial desktop processor to achieve gigaflop performance (one billion floating-point operations per second), a threshold originally associated with the supercomputing world. To take full advantage of the PowerPC G4 with Velocity Engine, Apple also designed a new logic board architecture to maximize overall system throughput. The Power Mac G4 architecture includes a higher-bandwidth memory bus, support for AGP graphics, an Ultra ATA/66 interface for fast hard disk access, dual-channel USB, optimized FireWire performance, and new capabilities such as wireless networking support. The Power Mac G4 systems are the first to include the industry-leading ATI RAGE 128 Pro graphics. RAGE 128 Pro graphics cards deliver accelerated 2D/3D performance for awesome gaming and scientific visualization. The result is a system that dramatically outperforms Windows-based systems in the tasks creative professionals have to accomplish day in and day out.

Q. What makes the Velocity Engine so powerful?

A. The Velocity Engine provides a 128-bit vector processing unit on the PowerPC G4 processor itself. This vector unit uses parallel processing technology that was pioneered on multimillion-dollar supercomputers. The Velocity Engine has 162 new dedicated instructions integrated into silicon that can be used to greatly accelerate intensive multimedia and math calculations. It does this by working on a whole set of data simultaneously, rather than one data point at a time. The Velocity Engine also operates completely independent of both the integer unit and the floating-point unit, enabling all three units to process data at the same time.

Q. How does the PowerPC G4 compare with the Pentium III?

A. Real-world performance depends not only on megahertz or processor speed, but also on how many instructions and how much data the processor can handle with each cycle. Megahertz is like the speed limit, and instructions and data per cycle are the number of lanes on a freeway. The PowerPC G4 processor can perform more instructions per cycle on twice as much data as the Pentium III processor. It has the capability to deliver four streams of 32-bit-wide data to the processor simultaneously—four times as much as the Pentium III. Based on Intel's own signal processing tests, the 500-megahertz PowerPC G4 is 2.2 times as fast as the 800-megahertz Pentium III. Adobe Photoshop, an application highly optimized for both the PowerPC G4 with Velocity Engine and the Pentium III with SSE, runs almost twice as fast on a 500-megahertz PowerPC G4 as on a 800-megahertz Pentium III.*

Q. Does my existing software work on the PowerPC G4 with Velocity Engine?

A. The applications you work with on the Power Mac G3 are compatible with the new Power Mac G4 systems.

* In processor measurements and Photoshop tests.

Q. How much third-party software developer support has Apple garnered for the new Velocity Engine?

A. At time of announcement, nearly 60 developers were delivering or planning support for the PowerPC G4 with Velocity Engine, including Adobe, Macromedia, Media 100, and others. Today, more than 20 updated software applications are shipping. At our developer website, www.apple.com/developer, software developers can find tutorials, generous sample code, and a full software development kit to get started on Velocity Engine support.

Q. How do I take advantage of the memory capacity of 1.5 gigabytes on the Power Mac G4?

A. Creative professionals love having lots of memory, especially for applications like Adobe Photoshop where it can be much faster to work entirely from RAM. The Power Mac G4 has four DIMM slots supporting DIMMs of up to 512 megabytes each, up to a maximum of 1.5 gigabytes. Any single application can allocate up to 999 megabytes of system RAM, and multiple applications open at the same time can use up to the full 1.5-gigabyte limit.

Q. What are the performance benefits of the ATI RAGE 128 Pro graphics card and the Power Mac G4 graphics architecture?

A. All Power Mac G4 configurations include the industry-leading, high-performance ATI RAGE 128 Pro graphics card and 16 megabytes of SDRAM graphics memory. The RAGE 128 Pro provides users with accelerated 2D/3D performance that supports up to 1920- by 1200-pixel resolution. The 16 megabytes of on-board memory provides support for 32-bit Z-buffering, alpha blending, fog, and multitexturing.

All configurations now include support for the industry-standard Accelerated Graphics Port (AGP) slot. Over time, this architecture will yield improvements in both 3D speed and quality as software developers begin to take advantage of the potent combination of OpenGL software and AGP hardware. For example, AGP enables 3D application software to use fast access to main memory to swap larger, more detailed textures. Finally, by adopting AGP, Apple gains greater leverage of the rapidly evolving graphics industry infrastructure, paving the way to greater graphics price/performance advantages for applications ranging from high-end publishing and design to advanced consumer games.

Q. How does the ATI RAGE 128 Pro graphics card support the Apple Cinema Display with the digital graphics interface?

A. The ATI RAGE 128 Pro is designed specifically to output the Transition Minimized Differential Signaling (TMDS) digital graphics signal via its Digital Visual Interface (DVI) connector directly to Apple digital flat-panel displays. The addition of this feature means that display owners will enjoy the simplicity and quality of a pure digital graphics signal. The exciting Apple Cinema Display, the largest flat panel ever brought to market, and the 15-inch flat-panel Apple Studio Display both incorporate the digital graphics interface, which receives the digital signal directly from the ATI graphics card without having to go through a digital-to-analog conversion. Not only does this pure digital signal deliver distortion-free, razor-sharp text and graphics, but it also means users don't ever have to make adjustments for signal degradation, which simplifies the overall user experience.

Q. What is the benefit of dual-channel USB ports?

A. The Power Mac G4 has two USB ports, each with its own 12-megabit-per-second channel, instead of two ports on a single shared 12-megabit-per-second channel. This essentially doubles the bandwidth available for USB peripherals and increases their performance. For example,

you can listen to digital audio from speakers connected to one USB port while printing a large document on a USB printer connected to the second port, without any of the latency or interruption that might occur on a shared bus because of heavy data traffic.

Q. How do I connect SCSI devices to the Power Mac G4?

A. Apple and several other companies offer low-cost SCSI PCI cards that will do the job. At the same time, there has never been a broader range of peripherals available for USB and FireWire: Virtually everything that was popular on SCSI is now available in USB and FireWire versions, including printers, scanners, hard drives, removable drives, CD-RW, DVD-ROM, joysticks, video cameras, still cameras, MIDI devices, and more. These new peripherals are even easier to use over USB and FireWire, because they are fully hot pluggable, don't need IDs or termination, and even have longer, more flexible cables that allow you to put your peripherals where you want them.

Q. Can I connect ADB devices to the Power Mac G4?

A. No. As part of Apple's ongoing platform simplification, we've removed the ADB port from the Power Mac. There are more than 200 USB devices announced or shipping.

Q. How does the Ultra ATA/66 hard drive interface improve on earlier implementations?

A. Ultra ATA/66 is the latest interface for low-cost internal ATA hard drives, doubling the available bandwidth of the ATA/33 bus used in the Power Mac G3. In MacBench 5.0 Disk tests, the Ultra ATA/66 hard drives used in the Power Mac G4 are up to 61 percent faster than their predecessors.

Q. If Ultra ATA/66 is so fast, do I still need SCSI hard drives?

A. Most users probably don't need SCSI. The Ultra ATA/66 drives in the Power Mac G4 are fast enough for everyday tasks and even intensive multimedia uses like Photoshop and FireWire-based digital video capture and editing. In fact, internal Apple testing indicates that the Ultra ATA/66 drives perform sustained read and write functions faster than SCSI drives with similar specifications. Some high-end professionals, however, may prefer to use a RAID configuration, which combines multiple drives into one larger, faster volume. This is typically done using an Ultra2 LVD SCSI PCI card and drives, which are available as build-to-order options from the Apple Store.

Q. What about FireWire for mass storage?

A. FireWire-based mass storage is one of the hottest new peripheral applications. There are now dozens of hard drive options that can plug directly into FireWire ports without the worry of setting device IDs, the confusion of whether to use a terminator, or even the hassle of shutting down and restarting the computer. FireWire supports hot plugging, and it even provides bus power so that many drives don't need to be plugged into an AC outlet—they draw their power from the Mac over FireWire itself. FireWire drives can read and write data at speeds anywhere from 9 to 16 megabytes per second, and with new FireWire RAID software, these drives can also be combined seamlessly into larger and faster volumes.

Q. What makes the Power Mac G4 ideal for making Desktop Movies?

A. With the Power Mac G4, digital video is now plug and play. The Power Mac G4 integrates the key elements necessary for professional-quality, all-digital video editing. Just connect the Power Mac G4 computer to a FireWire-equipped DV camcorder, install a video editing application like Apple's Final Cut Pro, and the result is a complete desktop movie studio.

Q. Why is desktop moviemaking so efficient on the Power Mac G4?

A. We tuned all of the computer's associated subsystems for the throughput, processing, memory, and expansion needs of the video editor. For example, the high-performance FireWire serial bus allows for direct input of digital video. The PowerPC G4 with Velocity Engine was engineered for accelerated effects rendering. The superfast Ultra ATA/66 hard disk drive and three 3.5-inch internal expansion bays meet the requirements of video processing. The computer has room for more than 100 gigabytes of internal hard disk storage, so you can easily store about 8 hours of digital video footage without the need for expensive external RAID arrays. Three 64-bit-wide PCI slots accommodate high-end solutions for video acceleration and effects processing. There's even a DVD-RAM drive in some configurations, so you can back up your entire day's work on DVD and burn new media for your team members.

Q. What else do I need to make Desktop Movies with the Power Mac G4?

A. The Power Mac G4 is remarkably complete when it comes to providing the elements needed for digital video production. The only other tools required are a video source, such as a digital video camera or drive containing digital video clips, and software to perform video editing, such as Apple's esteemed Final Cut Pro. The computer itself provides all other technologies necessary for Desktop Movies, such as unprecedented processor speed, powerful RAM, advanced graphics processor, fast hard drive, and three built-in FireWire ports.

Q. How much memory do I need to make movies with the Power Mac G4?

A. The amount of memory required to make movies depends on the length and type of movies you intend to make. All Power Mac G4 models come with ample memory to get you started. If you find you need additional memory, the Power Mac G4 supports up to 1.5 gigabytes of high-performance PC100 SDRAM. Additional memory can be purchased from your authorized Apple reseller or the online Apple Store.

Q. Can I use an analog camcorder to make movies on the Power Mac G4?

A. The video source for your Desktop Movies does not need to come from a DV camcorder. To use an analog camcorder with the Power Mac G4, just connect an analog-to-digital converter device. (However, compared with analog camcorders, FireWire-based DV camcorders transfer video more quickly.)

Q. Can I use Final Cut Pro and iMovie software on the Power Mac G4?

A. The new release of Final Cut Pro, version 1.2, supports the Power Mac G4. It utilizes the Velocity Engine to enhance rendering times for effects and transitions. In addition, Final Cut Pro 1.2 supports the PAL format and provides full-frame DV playback with increased quality on your computer screen. See www.apple.com/finalcutpro for details. iMovie software is not available for the Power Mac G4.

Q. Can I use the DVD-RAM drive to create a DVD-Video disc for a home player?

A. Although you can use the DVD-RAM drive and third-party authoring software to create a DVD-Video disc layout complete with MPEG-2 video and AC-3 audio, most home DVD-Video players cannot read DVD-RAM discs. However, a disc of this type can be used and tested on other Power Mac systems with third-generation DVD-ROM drives, which Apple began shipping in the Power Macintosh G3 in January 1999. You can also use the DVD-RAM drive to save video in dozens of other QuickTime formats, including DV, Sorenson, and even MPEG-1.

Q. Can I watch a DVD-Video movie on the DVD-ROM or DVD-RAM drive?

A. Yes. The Power Mac G4 includes the hardware and software necessary to play DVD-Video titles using either drive.

Q. Can I use the Power Mac G4 to watch a DVD-Video on my home TV?

A. The Power Mac G4 does not include the hardware support necessary to send the DVD-Video signal or the AC-3 audio to your home AV equipment.

Q. How do I use the Power Mac G4 in an AirPort wireless network?

A. The Power Mac G4 is ready for wireless networking. It includes a slot for the AirPort Card on the main logic board and a built-in antenna, so you simply slide the card in, attach the antenna cable, and install the software. Then you can communicate with any other AirPort-enabled iBook, iMac, PowerBook, or Power Mac G4, or directly with an Airport Base Station. And you can move your Power Mac G4 to the most convenient place, regardless of Ethernet and phone jack availability. Workgroups and classrooms will find this to be a convenient way to add Internet access without having to invest in additional networking hardware or install extra Ethernet cabling.

Q. Should I shut down my Power Mac G4 or put it in sleep mode when it's not in use?

A. The Power Mac G4 sleeps at such low power that you should rarely need to shut down your Mac. With its PowerBook-style sleep management, the Power Mac G4 is able to turn off most of the subsystems in the computer to achieve an extremely low-power sleep mode of around 6 watts. If you were to shut down the computer entirely, but leave it plugged into the wall, it would consume about 3 watts. With the computer in sleep mode, just tap the space bar and you'll be back at your desktop, just the way you left it, much more quickly than booting from scratch. The behavior of the power button has been modified to take advantage of this convenience. Pressing the button automatically takes the system into and out of sleep, while the Shutdown function is still available from the Special menu.

For More Information

For more information about the Power Mac G4, visit www.apple.com/powermac.

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